

Recovery Plan Action Status

Plan Name: Shenandoah Salamander

Plan Status: Final

Plan Date: 29-Sep-94

Lead Agency: USFWS

Lead Office: Virginia Ecological Services Field Office

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Species	Action Priority #	Action #	Action Description	Action Status	Est. Initiation Date	Est. Completion Date	Responsible Parties	Work Type	Labor Type	Action Comments
Shenandoah salamander (Plethodon shenandoah)	1	1	Compare acid tolerance of P. Shenandoah and P. cinereus	Unknown			National Biological Survey , Virginia Department of Game and Inland Fisheries, Region 5, Division of Ecological Services, Shenandoah National Park	Work type not yet selected	Labor type not yet selected	
Shenandoah salamander (Plethodon shenandoah)	3	10	Conduct integrated studies to determine how changes in forest cover will affect the surface environment	Not Started			National Biological Survey , Virginia Department of Game and Inland Fisheries, Region 5, Division of Ecological Services, Shenandoah National Park	Work type not yet selected	Labor type not yet selected	
Shenandoah salamander (Plethodon shenandoah)	3	11	Document tree defoliation and mortality during and following pest outbreak years	Not Started			National Biological Survey , Virginia Department of Game and Inland Fisheries, Region 5, Division of Ecological Services, Shenandoah National Park	Work type not yet selected	Labor type not yet selected	Would need to be repeated in successive outbreak years
Shenandoah salamander (Plethodon shenandoah)	3	12	Hold salamander information exchange sessions	Ongoing Current	FY 2010		Virginia Department of Game and Inland Fisheries, Region 5, Division of Ecological Services, Shenandoah National Park	Management: Habitat Maintenance and Manipulation, Other: Information and Education	Labor type not yet selected	Working with NPS, VDGIF, and Smithsonian Institute to share information and consider information in consultation on NPS activities
Shenandoah salamander (Plethodon shenandoah)	3	13	Incorporate the Shenandoah salamander into SNP public education programs	Unknown			Region 5, Division of Ecological Services, Shenandoah National Park	Work type not yet selected	Labor type not yet selected	First year costs for development of program

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Shenandoah salamander (Plethodon shenandoah)	2	14	Conduct a detailed vegetation analysis in Shenandoah salamander habitat	Not Started			National Biological Survey , Region 5, Division of Ecological Services, Shenandoah National Park	Work type not yet selected	Labor type not yet selected	Will be part of Park's GIS
Shenandoah salamander (Plethodon shenandoah)	2	15	Conduct an experiment to determine the impacts of forest defoliators and control agents	Not Started			National Biological Survey , Virginia Department of Game and Inland Fisheries, Region 5, Division of Ecological Services, Shenandoah National Park	Work type not yet selected	Labor type not yet selected	Priority will be elevated to 1 in the case of severe forest pest outbreak
Shenandoah salamander (Plethodon shenandoah)	2	16	Evaluate the effects of herbicide use in rights-of-way in the vicinity of P. Shenandoah habitat	Not Started			Environmental Protection Agency , Region 5, Division of Ecological Services, Shenandoah National Park	Work type not yet selected	Labor type not yet selected	Normal operating costs
Shenandoah salamander (Plethodon shenandoah)	2	17	Study abiotic factors affecting distribution	Ongoing Current	FY 2006		National Biological Survey , Virginia Department of Game and Inland Fisheries, Region 5, Division of Ecological Services, Shenandoah National Park	Research: Climate Change	Graduate Student	USGS and NPS are partnering with other researchers and managers to evaluate susceptibility of the Shenandoah salamander to climate change through modeling. This project was initiated in 2010.
Shenandoah salamander (Plethodon shenandoah)	2	18	Study behaviors and activity cycles relevant to management	Ongoing Current	FY 2007		National Biological Survey , Virginia Department of Game and Inland Fisheries, Region 5, Division of Ecological Services, Shenandoah National Park	Research: General	Graduate Student	
Shenandoah salamander (Plethodon shenandoah)	2	19	Provide Park employees with mandatory Shenandoah salamander training and information updates on a regular basis	Unknown			Virginia Department of Game and Inland Fisheries, Region 5, Division of Ecological Services, Shenandoah National Park	Work type not yet selected	Labor type not yet selected	

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Shenandoah salamander (Plethodon shenandoah)	1	2	Study reproductive and chronic effects of acidity	Not Started			National Biological Survey , Virginia Department of Game and Inland Fisheries, Region 5, Division of Ecological Services, Shenandoah National Park	Work type not yet selected	Labor type not yet selected	Plus an additional 10K in subsequent years
Shenandoah salamander (Plethodon shenandoah)	2	20	Ensure communication between maintenance personnel and resource management specialists before initiating any habitat alteration in Shenandoah salamander habitat	Ongoing Current	FY 2010		U.S. Fish and Wildlife Service, Shenandoah National Park	Management: Planning	Labor type not yet selected	Normal operating costs
Shenandoah salamander (Plethodon shenandoah)	2	21	Develop guidelines for trail and fire management in the vicinity of Shenandoah salamander habitat	Ongoing Current			Region 5, Division of Ecological Services, Shenandoah National Park, Potomac Appalachian Trail Club	Management: Land Use	Internal Administrative	Implementation of guidelines will fall within normal operating costs. In 2010, USFWS and NPS began work to comprehensively consider and evaluate NPS management activities and their effects on the Shenandoah salamander
Shenandoah salamander (Plethodon shenandoah)	1	3	Continue support studies defining relationship/interactions of P. cinereus and P. Shenandoah	Ongoing Current	FY 2006		National Biological Survey , Virginia Department of Game and Inland Fisheries, Region 5, Division of Ecological Services, Shenandoah National Park	Research: Competition	Graduate Student	Such studies may receive logistical support and funding based on proposed work
Shenandoah salamander (Plethodon shenandoah)	2	4	Determine optimal survey methodology for long-term monitoring	Ongoing Current	FY 2008		National Biological Survey , Virginia Department of Game and Inland Fisheries, Region 5, Division of Ecological Services, Shenandoah National Park	Research: Population Surveys	Graduate Student	

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Shenandoah salamander (Plethodon shenandoah)	2	5	Monitor Plethodon Shenandoah populations at all three isolates on a regular basis	Ongoing Current	FY 2008		Virginia Department of Game and Inland Fisheries, Region 5, Division of Ecological Services, Shenandoah National Park	Research: Population Surveys	Labor type not yet selected	Operational monitoring will begin only following completion of Task 2.1
Shenandoah salamander (Plethodon shenandoah)	2	6	Determine history and susceptibility of Shenandoah salamander habitat to acidification	Not Started			National Biological Survey , Virginia Department of Game and Inland Fisheries, Region 5, Division of Ecological Services, Shenandoah National Park	Work type not yet selected	Labor type not yet selected	
Shenandoah salamander (Plethodon shenandoah)	2	7	Evaluate the effects of roads and trails on movements of Shenandoah salamanders and potential population fragmentation	Unknown			National Biological Survey , Virginia Department of Game and Inland Fisheries, Region 5, Division of Ecological Services, Shenandoah National Park	Work type not yet selected	Labor type not yet selected	Study not required as long as Park policy of no road or trail construction in P. Shenandoah habitat is in place
Shenandoah salamander (Plethodon shenandoah)	2	8	Prohibit back-country camping in Shenandoah salamander habitat	Unknown			Region 5, Division of Ecological Services, Shenandoah National Park	Work type not yet selected	Labor type not yet selected	Normal operating costs
Shenandoah salamander (Plethodon shenandoah)	3	9	Continue searches of suitable habitat, to find new populations and define boundaries of existing populations	Ongoing Current	FY 2008		Virginia Department of Game and Inland Fisheries, Region 5, Division of Ecological Services, Shenandoah National Park	Research: Population Assessment	Graduate Student	